GENERAL ELECTRIC
CDX-MODEL E
DENTAL X-RAY UNIT

COMPLETELY OIL IMMERSED

GENERAL ELECTRIC
X-RAY CORPORATION

PUB. 7A-156A

CDX

MODEL E

The Modernized Completely Oil Immersed Shock Proof Dental X-Ray Unit

With all High Tension Parts including the Coolidge X-Ray Tube Immersed in Oil

Impervious to dust, humidity, altitude and temperature

Approved and "Listed as Standard" by National Board of Underwriters

GENERAL ELECTRIC
X-RAY CORPORATION
2012 JACKSON BLVD. CHICAGO, ILL., U. S. A.

WHY DENTAL X-RAYS?

An analysis of the last consecutive 5,000 dental film series made at the Head Office of the Life Extension Institute showed that 62.8% of the group had some X-ray evidence of root infection. Fifteen years ago a similar study of 20,000 unselected dental series made at the Institute showed root infection in 63% of the teeth examined.

There is a great deal more enlightenment on this question now than there was a decade or so ago, and the fact that infected teeth may affect the whole body is quite generally accepted, yet there is an occasional individual who cannot understand how closely mouth health is allied to general health, and how the latter can be greatly affected by conditions beneath the gums and at the roots of apparently sound teeth.

When there is absence of local symptoms, such as, pain, swelling or soreness in the teeth or gums, it does not necessarily mean that the teeth and gums are healthy, for 40% of the teeth that show X-ray evidence of infection are devitalized or pulpless teeth, and chronic infection around the roots of such teeth practically never causes local symptoms. Among the signs of ill health, however, stated in the personal histories of this group whose dental films revealed such root infection, were "headaches", "fatigue", "muscle" or "joint" pains (often called "neuritis" or "rheumatism") "sleeplessness", "lumbago" and "nervousness".

To find the underlying causes of these sub-standard physical conditions or disturbances of health, it is, of course, necessary to weigh *all* the evidence produced by a thorough physical examination; and the dental X-ray examination is an almost indispensable part of that investigation.

In the analysis of the 20,000 examinations, referred to above, it was found that 94% of those showing root infection acted upon the recommendation of the Institute and took the films to their dentist; that 78% had extractions or treatment, or both, upon advice of their dentists or doctors; and that 67% of those taking such action reported relief from their symptoms or improvement in general health within six months.

In fact, as we have frequently stated, a focus of infection at the roots of the teeth presents a problem no different in principle from a focus of infection elsewhere in the body.

So much for dental X-ray examinations in relation to root infection and the health of the whole body. It is also true that X-ray films, carefully taken, may reveal many other defects in the teeth or jaws which are unsuspected, even after thorough inspection of the mouth. Hidden decay, especially where teeth are in contact, and around or under fillings, beneath caps and in the central portion of the crown of a tooth, may be discovered in this way. Many teeth which look normal on inspection are shown up as mere shells when subjected to the scrutiny of the X-ray. Root fragments are sometimes broken off during extraction of teeth. Detached filling particles are occasionally left under the gums. Such "foreign bodies" (often infected) are revealed by X-ray more frequently than one would suspect. Cysts and tumors in the jaw bone, in a stage of development or in a position to give no external signs, are frequently discovered during X-ray examination of the mouth. Unsuspected but deep pyorrheal pockets, resulting from extensive gum infection, have frequently been detected in the films. Sometimes impacted or unerupted teeth and excess teeth that have no normal place in the jaws are responsible for neuralgic symptoms. In a search for the cause of the pain such teeth are frequently disclosed by the X-ray.

We believe that every adult should have a complete dental X-ray examination. We base our opinion on the evidence in our files. We also believe that where the teeth are discolored or have large fillings, or where there are caps, crowns, pivots or decay, such teeth should be examined yearly by X-ray, as an important protective measure for one's health.

Reprinted from Health Journal *"How to Live"*
of the Life Extension Institute

THE PATIENT'S APPRECIATION OF X-RAY DIAGNOSIS

It is no longer a question of whether the dental patient feels he can afford an x-ray examination as a means of diagnosis. He has advanced far beyond that manner of reasoning, thanks to the laudable efforts of both the dental and medical professions to enlighten him in this respect.

Today you will find possibly a majority of your own patients fairly well informed about the fundamentals of x-ray diagnosis—citing articles in lay publications which lead to their appreciation of the vital importance of an x-ray examination. Their attitude is that they cannot safely afford to forego it. This situation very naturally leads to the question: How many of these enlightened patients seek for themselves a dentist whom they know to be equipped with and using the x-ray more or less as routine in his daily practice? Their self-interest in this respect is an all-important consideration, for they pride themselves on good judgment and commend their dentist amongst friends and acquaintances.

The aforegoing paragraphs read very much like sales propaganda — and admittedly serve most effectively as such. Nevertheless, we believe them to be entirely within the facts as they concern an increasingly large number of present and future dental patients. That an x-ray unit will in the comparatively near future be considered as indispensable to office equipment as the dental engine, is a prediction which in the light of the present seems quite logical.

It is reasonable to state that no dentist, even though he may not own an x-ray unit, will discourage a patient, present or prospective, in his desire for an x-ray examination as a part of dental service. The dentist under these circumstances obviously avails himself of radiographic service as it is offered outside his office, and refers his patient with due instructions to some x-ray laboratory. That this procedure constitutes efficient dental service cannot be gainsaid—the dentist utilizes a recognized aid to better diagnosis and his patient benefits thereby.

But under the above plan will the x-ray be utilized to the extent it should be in daily practice? Will the dentist hesitate lest he inconvenience his patient too frequently in referring him elsewhere for x-ray check-ups on dental work in progress? Ask any dentist who is using a dental x-ray unit in his office what his experience has been. Invariably the answer will be, he had not realized how important and indispensable the x-ray is in most work until he had it available, within arm's reach, every minute of the day, so that every patient might obtain the advantage of this modern diagnostic aid while in the chair.

Every dentist can afford to install an x-ray unit—much better than he can afford being without it. It is not a luxury—not a burdensome overhead expense. It is, rather, a judicious investment, when the returns are measured in terms of more efficient work and a pleased clientele.

SOME IMPORTANT CONSIDERATIONS in the SELECTION of an X-RAY UNIT

When you have reached the decision to avail yourself of the advantages in having facilities for x-ray diagnosis in your office, the next important step is the selection of an x-ray unit with which you may realize the quality of radiographic results that may be logically anticipated.

It would not be consistent to contemplate an x-ray installation solely from the standpoint of its comparative selling price or initial outlay. It is more logical to look upon it as a long term investment. Conservatively stated, one should figure on the usefulness of the apparatus over a period of at least ten years. This is sufficient reason for a careful and deliberate investigation before purchase, to make certain that every modern feature of advantage is incorporated in the unit finally selected. A compromise which would seem of no great immediate consequence may in time be considered a serious handicap in certain types of work.

In short, the aim is primarily to produce a quality of radiographic work which requires no apology, and contributes appreciably to a better diagnosis. The best insurance on this type of investment is obviously to buy high quality apparatus for high quality work.

The principal factors that should be taken into consideration as a guide in the selection of a dental x-ray unit may be summarized as follows:

1. The range of radiographic service which the unit offers.
2. The detail and brilliance of the radiographs produced, i.e., their diagnostic qualities.
3. Safety — proof against electrical shock.
4. The convenience, practicability and positiveness of electrical and mechanical controls.
5. Simplicity of manipulation and accessibility.
6. Patient's comfort.
7. Adaptability of the unit to the operating room.
8. Practicability of design and principles of construction.
9. Durability.
10. Operating characteristics in respect to climate, temperature, humidity and altitude.
11. Maintenance.
12. Esthetic features.
13. The experience of the manufacturer, his integrity, and established policies.
14. Price.

CDX Model E

When the original CDX X-Ray Unit was introduced in dental practice in 1923, it was widely acclaimed an ingenious design which made dental radiology conveniently practical, highly efficient and 100% electrically safe.

It represented a radical departure from conventional designs, in that it resorted to oil-immersion of both the high tension transformer and the x-ray tube, in a single metal container, hermetically sealed. Thus it solved, once and for all, the problem of electrical safety, for the simple reason that it was impossible for any one to come in contact with the high tension system.

The new principle of design, due to the insulating properties of the oil used for immersion, also permitted the use of a much smaller high tension transformer and a specially designed, midget-size Coolidge tube. The resulting compactness of the CDX was a revelation, likewise its extreme flexibility due to oil-immersion of the x-ray tube as well as all other high tension parts.

In the ten years following introduction of the CDX, thousands of dentists and institutions in all parts of the world had adopted it in their work, with an ever-increasing appreciation of the distinct advantages realized. The records of CDX performance over this long period of time proved conclusively that the principles of design were fundamentally correct.

These ten years of observation of CDX service in all phases of dental radiology, considered from every electrical and mechanical aspect, pointed to the ultimate realization of a new design which would incorporate every possible improvement that had suggested itself during this period, such new design to meet every conceivable requirement and contingency in modern dental radiology, and in anticipation of advanced technics with resulting increased requirements.

That, in a nutshell, is the background of this new and completely re-designed dental x-ray unit—the CDX—Model E. While it retains the original and world-renowned principle of oil-immersion of the x-ray tube, as conceived in G-E's *House of Magic*, new and important features and refinements throughout make it the most complete, thoroughly modern and attractive equipment unit ever designed for dental service.

Throughout the period of re-designing of the CDX, our engineering and designing experts had constantly in mind a group of suggested new features and improvements which, if found practicable to incorporate in a single unit, would bring to a realization an ideal long sought by specialists in dental radiology. That these G-E engineers and designers accomplished their purpose is impressively evident in the ultimate design, the CDX—Model E. Following are some of the features and refinements above alluded to which have been ingeniously combined to make the CDX—Model E what it is today:

Increased power, penetration and radiographic speed.

Wider range of radiographic service.

A new Coolidge x-ray tube with Benson focus, with one of the finest projected focal spots ever incorporated in a Coolidge tube.

Unprecedented radiographic brilliance and detail.

Increased target-to-film distance, minimizing distortion.

Added flexibility, to facilitate all types of work.

Beauty in design that is unprecedented, with streamline effects.

Increased range of travel of tube head, both horizontally and vertically, permitting radiography of both jaws at one chair level; also added distance between wall and chair if desired.

Pointed centering cone, with scientifically designed diaphragm.

Removable meters with wireless connections.

An "on and off" switch operating automatically to energize the unit and shut it off again, simply by removing and replacing the exposure timer on its hook.

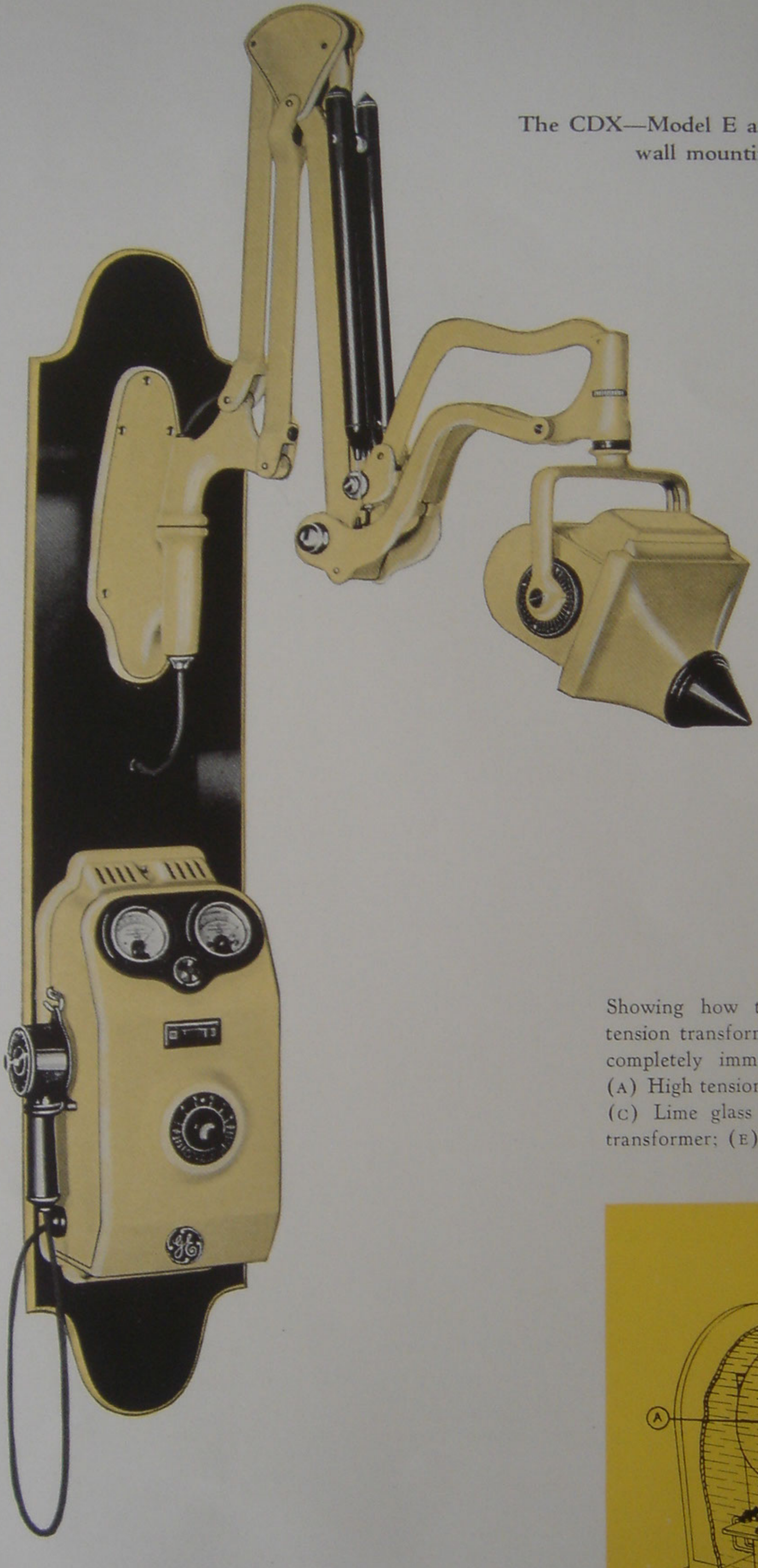
A pilot light automatically indicating when the apparatus is being energized.

An automatic circuit breaker which protects the high tension circuit against overload due to abnormal line conditions.

An improved wall mounting panel, integral to the unit and without extra charge.

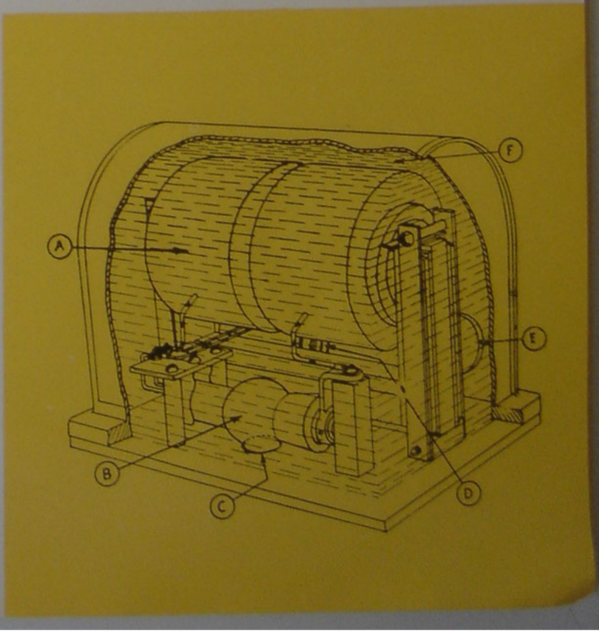
Connecting low tension cables almost completely concealed.

And, finally, the retention of the principle of oil immersion of the x-ray tube and high tension transformer, to render the apparatus dustproof as well as impervious to all climatic variations, thereby insuring consistent performance irrespective of extremes in humidity, temperature or altitude. Unusual compactness, another feature due to this principle, is also retained.



The CDX—Model E as arranged for wall mounting.

Showing how the CDX Coolidge tube, high tension transformer and filament transformer are completely immersed in oil in one container. (A) High tension transformer; (B) Coolidge tube; (C) Lime glass window of tube; (D) Filament transformer; (E) Oil expansion chamber; (F) Oil-filled container.



On a preceding page attention was directed to some important considerations in the selection of a dental x-ray unit. It is therefore logical that these same considerations should be applied to the CDX—Model E. Accordingly, the descriptive matter immediately following will be devoted to each of these considerations, in order that a true evaluation of this apparatus may be readily determined.

Range of Radiographic Service

The CDX—Model E offers a complete dental service—and more. This includes standard intra-oral radiography, as well as occlusal intra-oral (upper and lower), bite-wing intra-oral, jaw, profile, sinus (maxillary, sphenoid, frontal, etc.), and mastoid radiography. Furthermore, radiography of the extremities, the shoulder, chest and pelvis fall within the range of this unit.

The exposure time for the various regions is exceptionally short. For instance, the exposure chart as recommended for the standard intra-oral radiographs, using intermediate and radiatized films, ranges from 2 to 4½ seconds; sinus radiographs, nose and chin position, 7 seconds at a 24-inch focal-film distance, with intensifying screens; other regions with correspondingly short exposures.

The Operative Manual which accompanies the CDX—Model E describes in detail each and every technic, and gives a complete exposure schedule.

Radiographic Detail and Brilliance

The oil-immersed Coolidge tube, designed specially for use with the CDX—Model E, utilizes the Benson focus, and has one of the smallest projected focal spots ever incorporated in a Coolidge tube. It is therefore a most important factor in the production of the exceptionally fine radiographic detail so characteristic of CDX—Model E radiography.

In intra-oral radiography, detail in the film is enhanced by the pointed bakelite centering cone, which automatically increases the focal-film distance, and with its scientifically designed lead diaphragm minimizes stray radiations, both primary and secondary.

These factors not only contribute to the brilliance of the radiograph but offer material x-ray protection to both operator and patient.

Safe—Shock Proof—X-Ray Protective

Due to unique design, whereby the Coolidge tube itself and all other high tension parts are immersed in oil and hermetically sealed in a single container, the CDX—Model E unit overcomes the problem of electrical safety in an ideal manner. It leaves not even a remote possibility of accidentally coming in contact with any part of the high tension system. In other words, it is shock proof and fool proof. Incidentally, CDX—Model E is approved and "listed as standard" by the National Board of Underwriters.

It can be stated unequivocally that the introduction of 100% electrical safety has done more to popularize the use of x-rays in dental offices than any other single development in the history of the x-ray.

X-ray protection is provided in the CDX—Model E in several ways. First, the Coolidge tube, being constructed of lead glass, is in itself x-ray protective. Its small lime glass window offers egress to the useful or primary radiations.

The above x-ray protection is supplemented by a lead shield or cone built into the cover of the tube head, also by the lead diaphragm which forms a part of the bakelite centering cone.

Thus every possible precaution has been taken against stray radiation.

Positive Electrical and Mechanical Controls

The Victor-Kearsley Stabilizer, used exclusively on G-E x-ray apparatus, is a device which in this instance automatically maintains 10 milliamperes of current through the CDX tube regardless of voltage variations on the supply line; in fact, even with a line voltage variation as high as 15%, this stabilizer will automatically limit variation of tube milliamperage to within ½ milliampere.

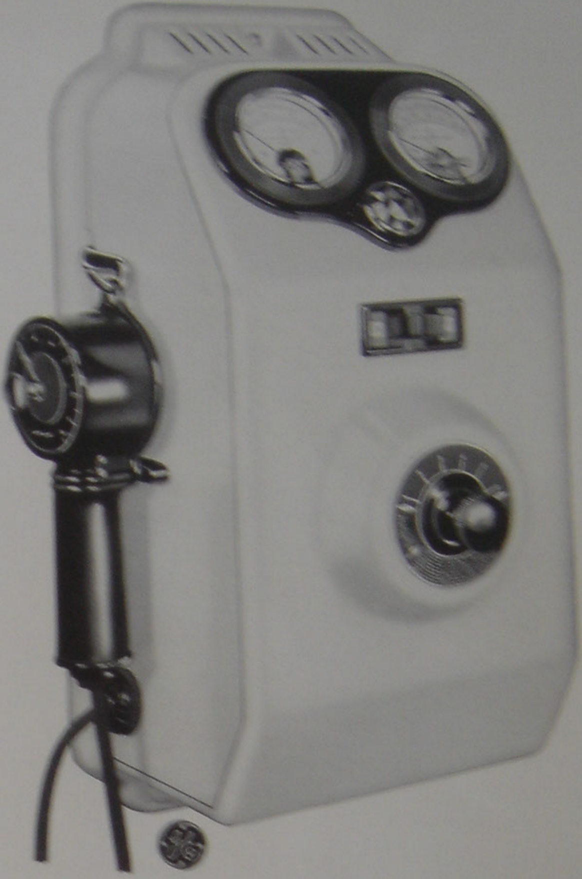
As the control of milliamperage is such an important factor in the consistent production of radiographs of the same density, its automatic control through the medium of the Victor-Kearsley Stabilizer incorporated in the CDX—Model E, has proved a most desirable and popular feature.

A Voltage Compensator with six steps of manual control, serves to compensate for any temporary line voltage change, thus eliminating the necessity of changing internal electrical connections.

The Main Line Circuit is automatically closed or opened, respectively, when the exposure timer is removed from or replaced on its hook located on the side of the control panel. The moment the timer is lifted from its hook the unit automatically becomes energized by the main line circuit, and is so indicated by the pilot light on the control panel. With the return of the timer to its position on the hook, the unit is automatically disconnected from the line circuit and the pilot light turned off.

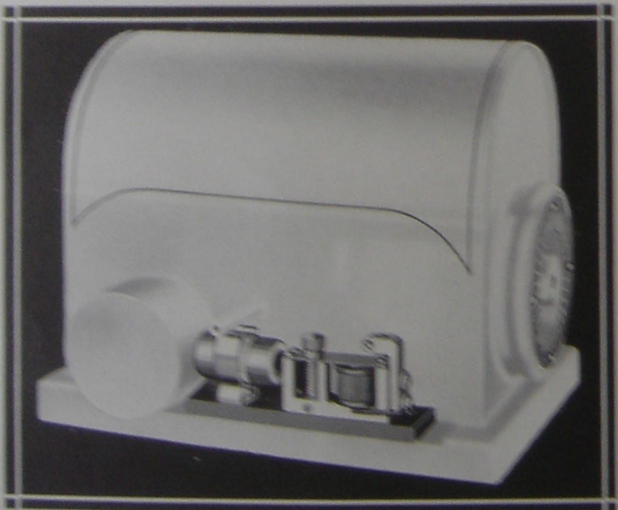
The Ammeter and Voltmeter, located respectively on either side of the pilot light, are of the high quality so essential to x-ray work. These are mounted at an angle to facilitate easy reading at a distance. A single mounting panel accommodates the pilot light jewel and both meters, and as the latter have wireless connections the mounting panel is instantly removable for convenient replacement or service on these parts.

The Exposure Timer serves not only to automatically measure the correct radiographic exposure time, but also to control the currents to both the high tension transformer and the tube filament transformer. Its operation is through a push button, the pressure of which instantly places said transformers in circuit, and actuates the timing mechanism which pre-determines the duration of flow of current through the tube.



Control unit, including insulating transformer and electrical controls, with automatic timer and main line switch.

To insure accuracy, the speed of the timing mechanism is controlled by magnetic damping through a disc which revolves between the poles of a permanent magnet. This principle is similar to that used in electric meters for measuring watt-hour consumption, where accuracy and dependability are first essentials.

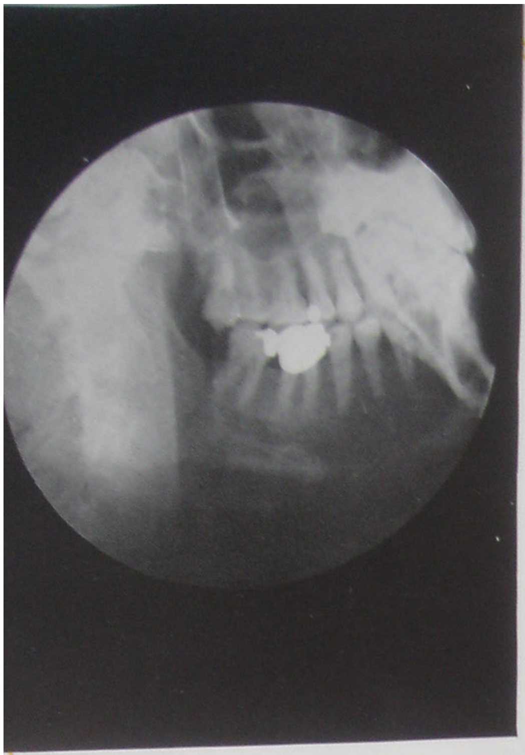


View of tube head with stabilizer cover removed, showing the Victor-Kearsley Stabilizer which automatically maintains constant tube milliamperage.

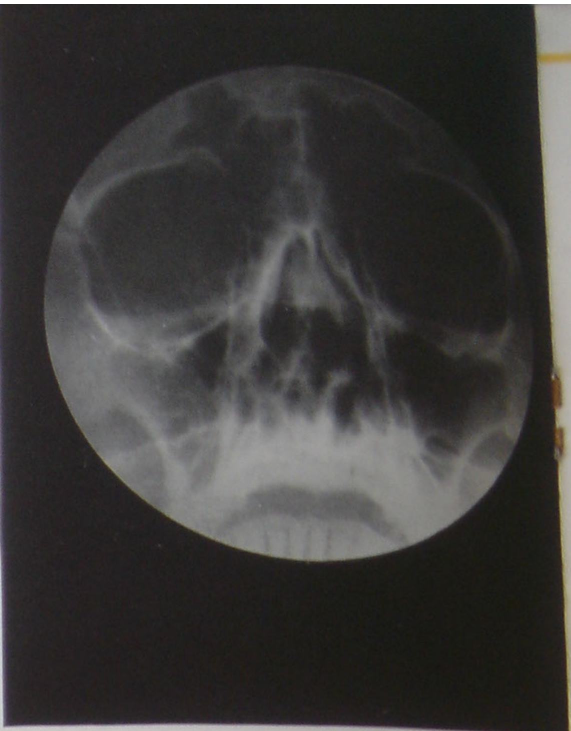
The timer dial is calibrated from ¼ second to 10 seconds, and may be reset forward or backward without having to first operate the timing mechanism or to energize the x-ray tube. With continuous pressure on the push-button the timer operates automatically to start the exposure and end it at the pre-determined period; if, however, after the exposure is started and it is desired to stop it at any time before expiration of the timer setting, it is only necessary to release pressure on the push-button.

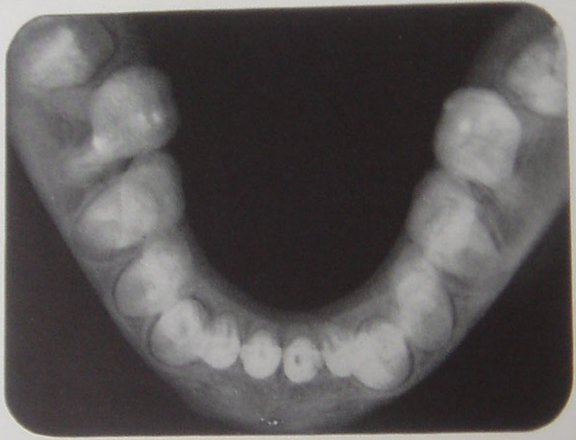
The exposure timer is connected through its cable to the control unit housing by means of a plug and socket, which precludes the possibility of a wrong connection.

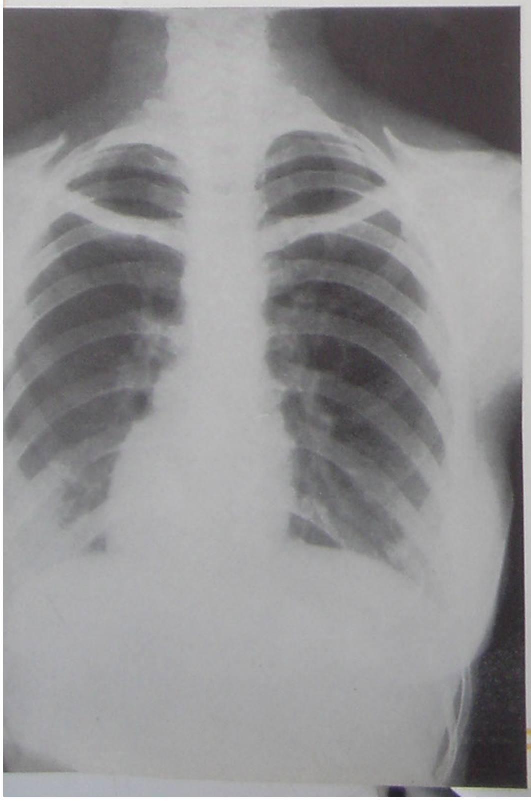
The Folding Bracket assembly is an entirely new design, all parts being materially strength-

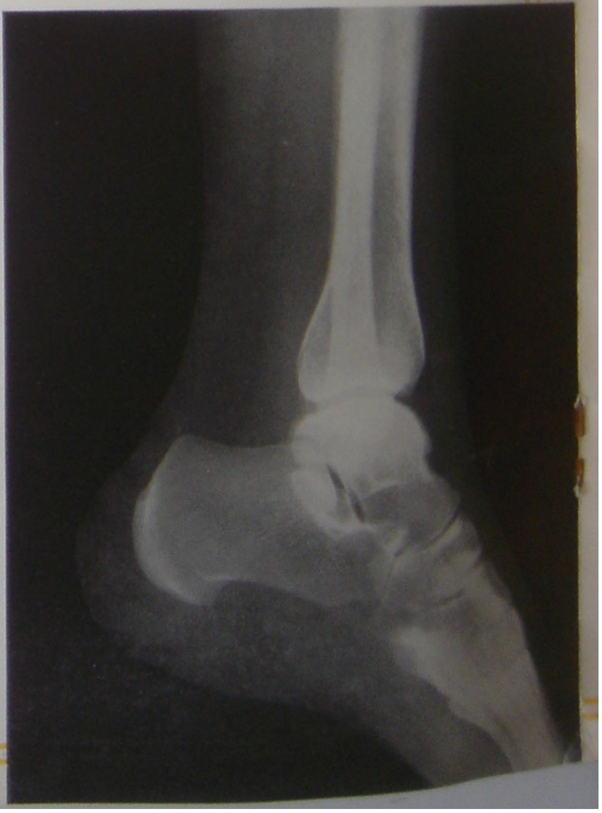


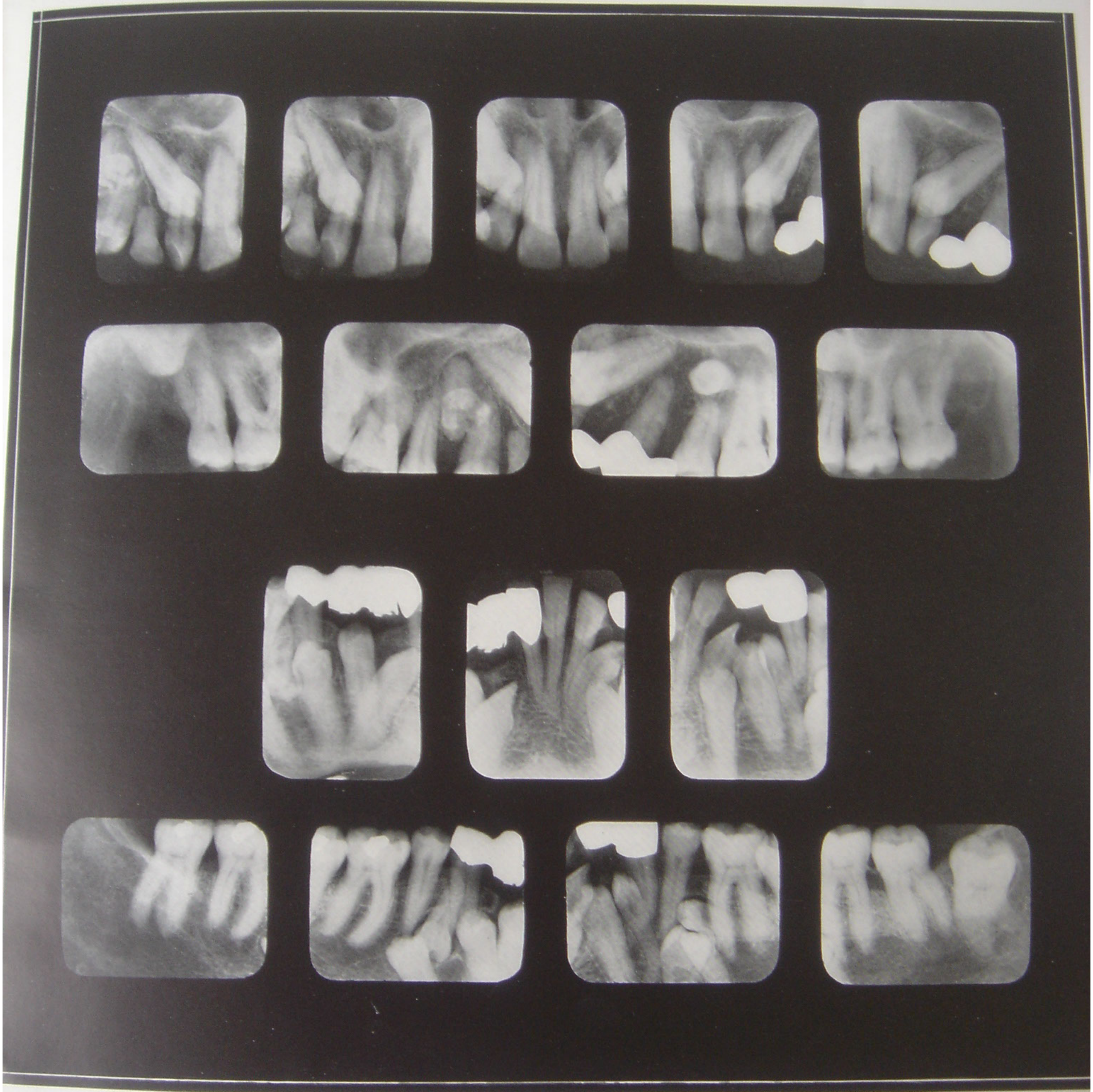
Typical CDX Radiographs



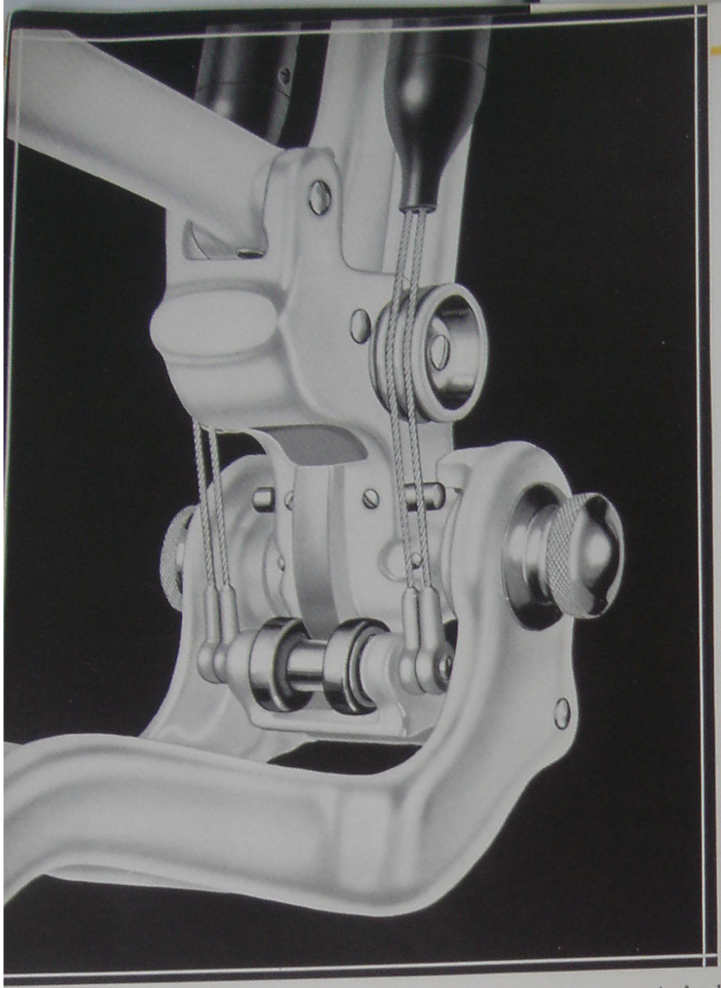








A 16-film examination of an individual mouth. Made with CDX—Model E.



This is the mechanism which provides precision control of tube head counterbalance—without locking devices.

ened and the rigidity increased. An appreciable increase in the ranges of horizontal and vertical travel permits placing of the chair farther away from the wall, if desired, also radiography of both jaws at one chair level.

The tube head is mounted on the distal end of the folding bracket, and all bearings or friction joints carefully and accurately machined and assembled so that manipulation of the head requires the minimum effort. The perfect counterbalancing of all parts eliminates the need of retaining screws.

The method of connecting the head to the folding bracket provides for easy removal for inspection or service, while the retaining mechanism precludes any possibility of the head becoming accidentally detached through negligence.

In offices where the chair is at an unusual distance from the wall, an extra-extension arm can be inserted on the CDX to increase its operating radius by 10 inches. This arm fits in between the wall-mounting panel and the folding bracket, in place of the standard connecting arm. (See illustration on page 19.)

The connecting cables are almost completely concealed, due to the design of the bracket. The spring housings remain parallel to the bracket in any position.

Simplicity of Manipulation and Accessibility

These factors are obviously of major importance to every dentist who contemplates using an x-ray unit. Unless every practical facility is provided in the design of the unit, he eventually will realize he is handicapped in certain types of work, that certain necessary procedures for a given result are too complicated and time-consuming.

The design of the CDX—Model E was with the purpose of making it quickly and conveniently adaptable to each and every type of radiography that the dentist finds necessary in daily practice. If the prospective purchaser will avail himself of the opportunity to see the CDX—Model E demonstrated—in fact, if he himself will put it to every conceivable test—he will be fully convinced of its practicability and immediate adaptability to the most critical requirements.

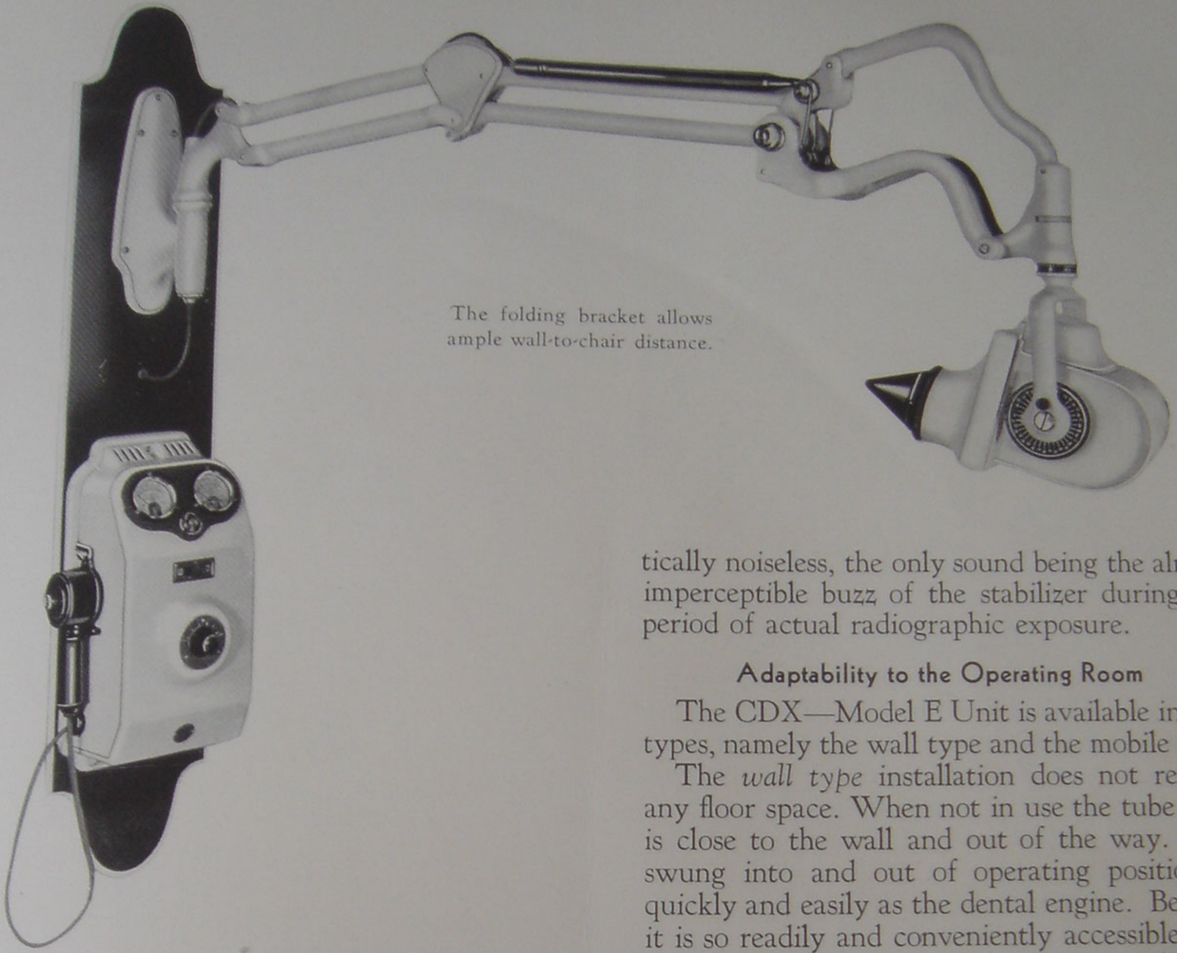
Take the tube head for instance. Observe how easily it is manipulated to the desired position and angle, and how it retains that particular setting without the use of locking devices.

As to the facility with which the x-ray tube may be brought into the desired position for raying a given area, consider the fact that the tube head can be completely rotated, mesiodistally, on its vertical axis. As rotation on its horizontal axis is through an arc of 290°, it is easy to understand how a combination of these movements will quickly bring the tube into proper position for the work in hand.

When the unit is arranged for wall installation, the assembly of the tube head and bracket is such as to permit their rotation through an arc of 180°, i.e., from wall to wall on either side of the wall-mounting panel.

These are the provisions which provide an unusual flexibility, making it possible to place the patient in a comfortable upright position, including angulation for lower occlusal radiography.

Large, easy reading angle scales are located at strategic points. On the reverse side of the



The folding bracket allows ample wall-to-chair distance.

exposure timer is a quick reference table, including the various angles required in intra-oral radiography.

Particular attention is called to the shape of the tube head and the method of suspending it within the fork of the bracket, to afford the operator a full view of the film in the patient's mouth while manipulating the tube head into proper position.

Practically speaking, the CDX—Model E reduces intra-oral radiography to three major steps: (1) place the film, (2) angulate, and (3) "press the button".

Patient's Comfort

Every facility possible has been incorporated in the CDX—Model E Unit to make the radiographic service of the dentist both comfortable and pleasant. A careful study of the working illustrations in these pages will show how nicely this problem has been solved.

The experience in having radiographic examinations made with this unit cannot fail to impress patients favorably. Its operation is practically noiseless, the only sound being the almost imperceptible buzz of the stabilizer during the period of actual radiographic exposure.

Adaptability to the Operating Room

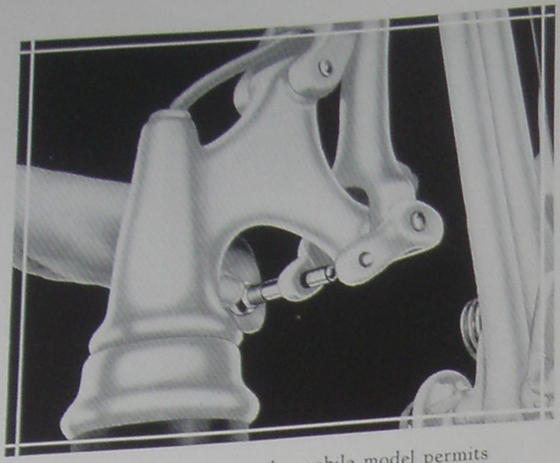
The CDX—Model E Unit is available in two types, namely the wall type and the mobile type.

The *wall type* installation does not require any floor space. When not in use the tube head is close to the wall and out of the way. It is swung into and out of operating position as quickly and easily as the dental engine. Because it is so readily and conveniently accessible, it is a constant invitation to the dentist to utilize the x-ray at various progressive stages of the work in hand.

The *mobile type* installation is mounted on large, easy-rolling, ball-bearing casters, to facilitate its being moved from chair to chair, or from room to room. When extra extension of the bracket becomes necessary, in order to lower it sufficiently to clear some doorways, this is done by simply releasing a lock bolt (see illustration, page 14) which makes it a simple procedure. The remarkable compactness and flexibility here realized mark a definite advance in mobile unit design.

It is important to emphasize the fact that there is only one CDX—Model E. That is to say, the description throughout this bulletin applies to the CDX—Model E Unit proper, whether it is furnished for wall installation or in mobile form; the only difference between these, therefore, is in the method of mounting.

The conversion of one style of mounting to another is a comparatively simple matter. For instance, if a wall mounted unit is installed, and subsequently a change of office location indicates



The removable pin on the mobile model permits further extension of the bracket to facilitate passing through low doorways.

the need of a mobile unit, it is only necessary to purchase the floor stand, after which the transfer of the suspension bracket and control unit to same may be completed in a few minutes. The reverse procedure is equally simple.

Practicability of Design

The idea (patented) of immersing a very short x-ray tube in oil, together with both high tension and tube filament transformers, in a single, vacuum-filled oil container providing automatic control of expansion, was conceived and developed in the G-E Research Laboratory by Dr. W. D. Coolidge, inventor of the world-famous Coolidge x-ray tube. It is one of the many valuable scientific contributions from the "House of Magic".

The conversion of Dr. Coolidge's experimental outfit into the original CDX professional model was another notable achievement of the engineering and designing staffs of the General Electric X-Ray Corporation — and now again with the recent development of the CDX — Model E.

The practicability of the principle of "tube operating in oil" has been proved conclusively, as this principle has also been successfully applied to G-E equipment of considerably greater capacity as used in medical diagnosis, and up to 300,000 volt industrial x-ray apparatus capable of penetrating a 4-inch thickness of steel plate.

Automatic stabilization of the milliamperage; physical separation of the main line current from the high tension energizing current by interposition of an insulation transformer; bracket suspension of the tube head, etc.; these, too, are original and basic factors embodied in CDX design and construction.

Another advantage of major consideration, which is due exclusively to this principle of design, is that the CDX—Model E will operate consistently and uniformly under any and all atmospheric conditions, impervious to dust, and regardless of extremes in humidity, temperature or altitude.

Durability

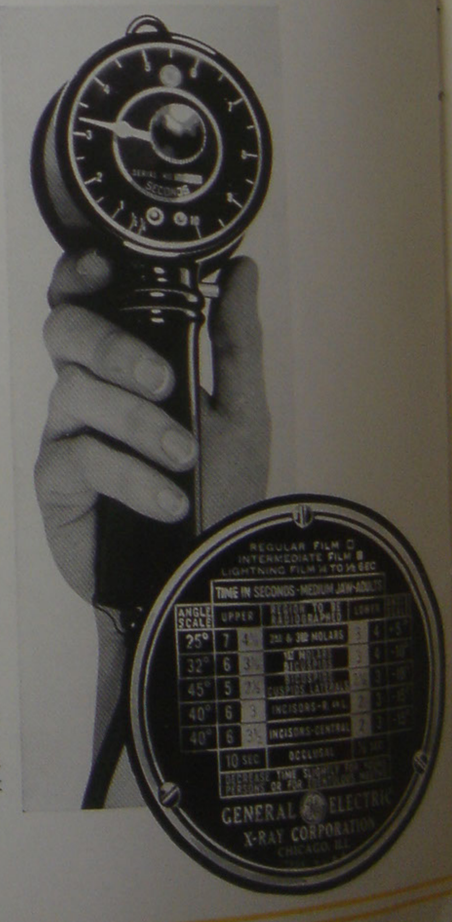
The life of a dental x-ray unit in daily practice should be considered not only in respect to time, but also in terms of many thousands of exposures and the usage attendant thereto. Thus the ideal x-ray unit is one which is extremely sensitive and responsive to the various operating controls, that it may be relied upon to deliver exactly the desired amount of energy on every exposure, and which at the same time will successfully withstand arduous service, day after day, year in and year out.

One may logically conclude, upon a careful study of CDX design and construction that the apparatus is durable.

Take the Coolidge tube for example. It is immersed in oil and hermetically sealed within the metal container, offering absolute protection against accidental contact and breakage.

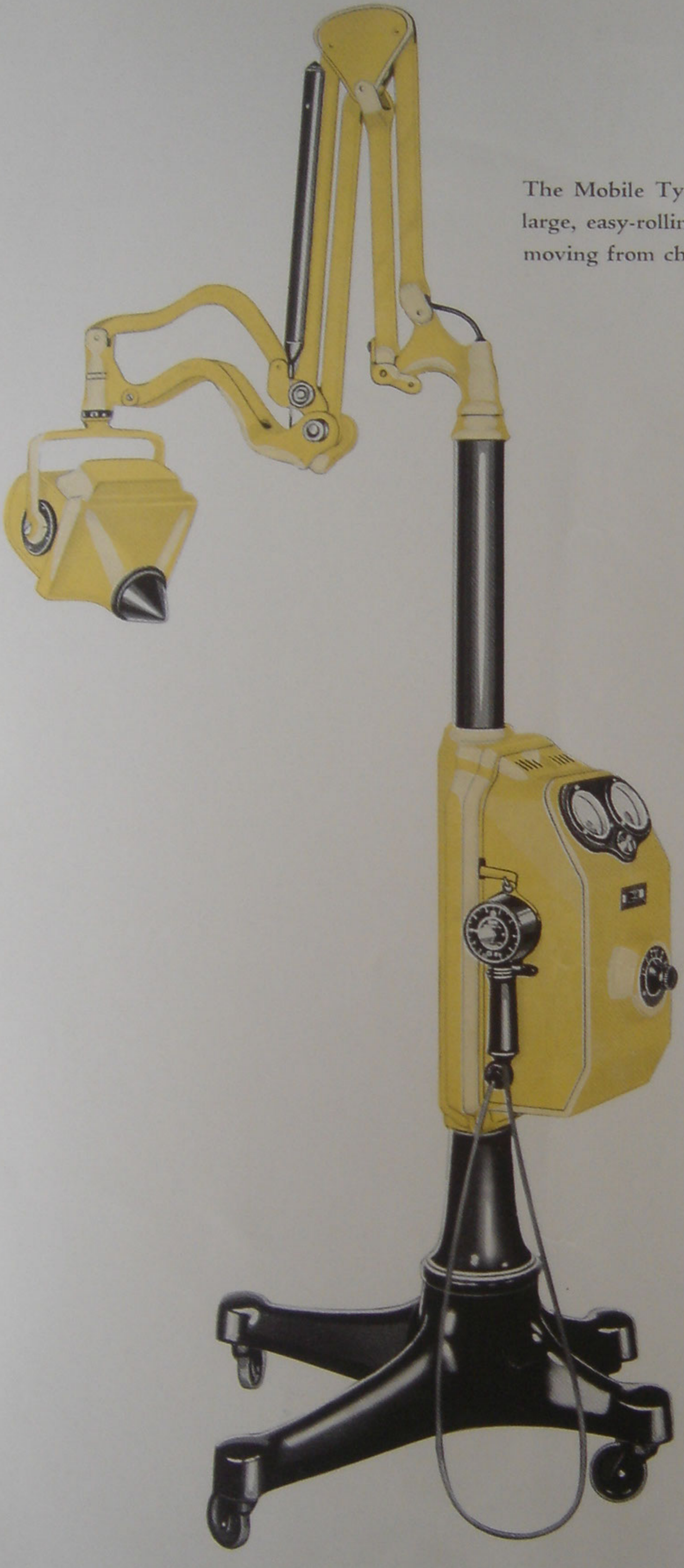
As further protection against damage to the Coolidge tube, consider the Victor-Kearsley Stabilizer which automatically controls the milliamperage through the tube to within one-half milliampere over a wider line voltage variation than is ever experienced with a central station source of supply.

To protect the unit against dam-

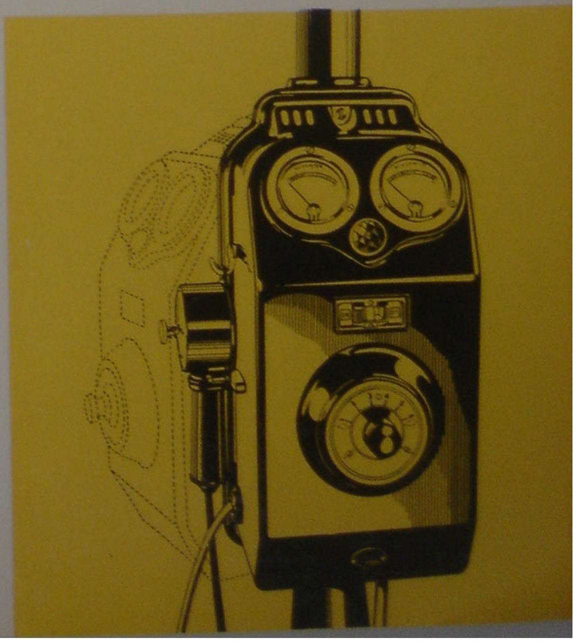


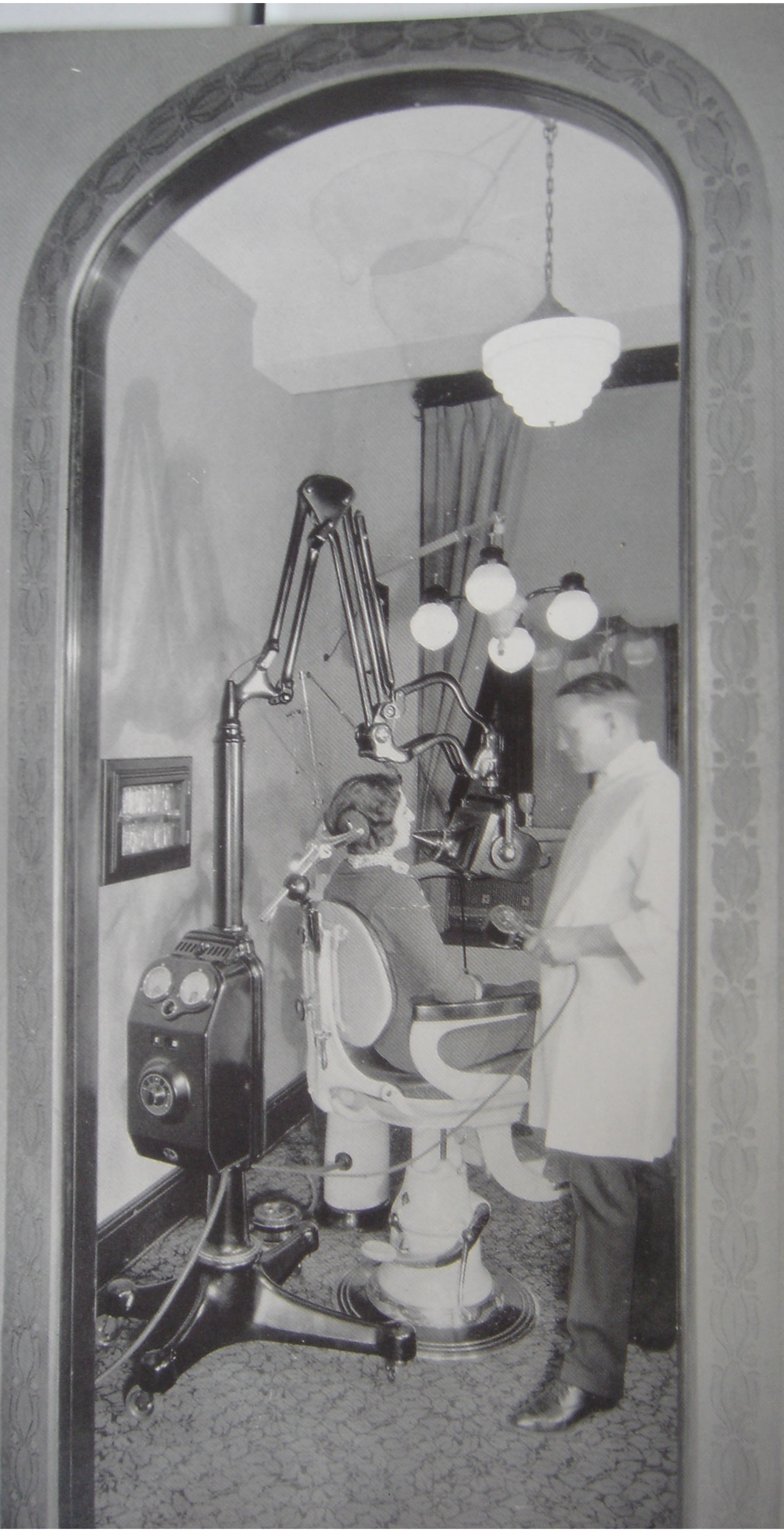
Automatic Exposure Timer. *Inset:* The exposure table which is mounted on back of timer.

The Mobile Type CDX—Model E is mounted on large, easy-rolling ball bearing casters, to facilitate moving from chair to chair or from room to room



The control unit on the Mobile Type CDX rotates approximately 40° either way from center.





age which might otherwise result from sudden surges, etc., on the line supply, an insulation transformer is interposed to provide the necessary physical separation between the high tension system and the line supply. Consequently, it is an induced low voltage current, rather than the incoming line current, which energizes the high tension transformer, and in turn the x-ray tube.

This insulation transformer is arranged for operation on either direct current or alternating current, 40 to 60 cycles. To adapt same, it is only necessary to change the connections to the proper taps on the terminal board. When used on direct current, a rotary converter and starting switch must of course be added. Through another series of taps on the terminal board compensation is made for incoming line voltage which is not standard, to obtain the required operating voltage.

Again, the automatic circuit breaker serves as an additional safeguard by protecting both the tube and the high tension windings against damage or burn-out by short circuits, etc.

Another safety feature is the pilot light which acts automatically to remind one that the current is flowing through some part of the unit. Therefore the possibility of inadvertently leaving the apparatus energized is very remote.

These are some of the features which go to prove in the long run that the CDX—Model E is designed and constructed to withstand maximum service in the dental office, clinic or laboratory. They also explain in part the highest rating given this x-ray unit by the National Board of Underwriters.

May we reiterate, that a very conservative estimate of the life of usefulness of the CDX—Model E is a minimum of ten years.

Operating Characteristics in Respect to Climate, Altitude and Temperature

The principle of oil-immersion of the x-ray tube is the only method that electrical engineering has developed up to the present which assures consistent operation regardless of its geographic location.

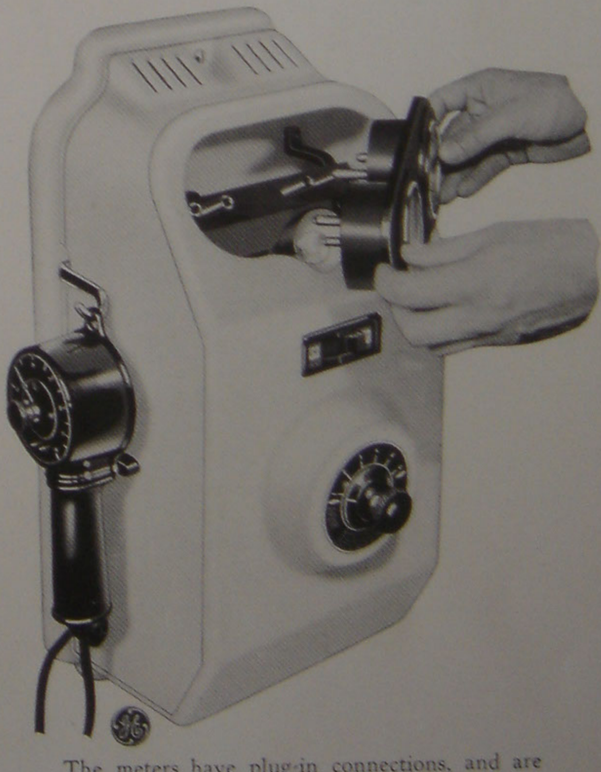
X-ray operators who have had some experience with this factor readily appreciate what this means. They are familiar with the severe limitations otherwise imposed on x-ray apparatus when operated in seasonally damp climates; when operated in the rarefied atmospheres of high altitudes, or in extremely high or low temperature zones. These limitations and attendant operating difficulties are eliminated once and for all with the use of the CDX—Model E, with its Coolidge Tube and high tension system immersed in oil, and hermetically sealed within the same container, to make it absolutely impervious to surrounding atmospheric conditions. For the self-same reason, a CDX user need never concern himself about the accumulation of dust on the x-ray tube and other high tension parts, a factor which cannot safely be ignored when using the conventional type of x-ray apparatus.

These are considerations worthy of special mention, for they point the way to all-year-round consistent performance, irrespective of seasonal changes, etc.

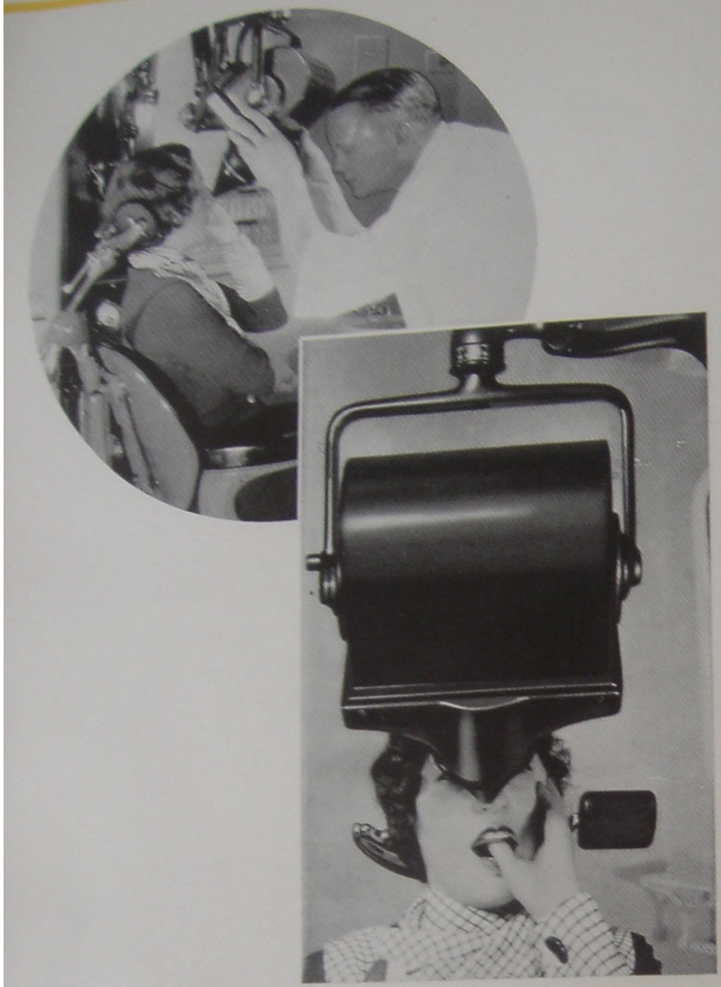
Maintenance Service

Although the designers have incorporated in the CDX—Model E unit practically every safeguard against break-downs or burn-outs, they have also provided every convenience for inspection, adjustment and replacement service.

Access to the interior of the operator's control unit is made quickly by simply removing the two screws which hold it in position. As the two meters and pilot light jewel are mounted on one bakelite panel, and the meters have wireless connections, this panel is removable without the use of tools.



The meters have plug-in connections, and are therefore instantly removable without tools.



The streamline design of the tube head of the CDX—Model E does more than enhance its appearance. You don't have to make many radiographs with it before you realize that this design gives you full visibility of the operating field at all times —from above, from below and from either side of the tube head. This, together with the pointed cone and the large, easy reading angle scales on both sides of the tube head, serves to make for easy and consistently accurate radiography.

The two views above serve to illustrate this particular feature. Observe in the upper view how conveniently the operator sights the tube head, the while he has full vision of the part to be radiographed. The lower picture shows this same position as viewed by the operator. He actually sees what he is doing—guesswork is eliminated.

The exposure timer cable being connected to the control unit through a plug and socket device, the timer is instantly removable for inspection or service.

While the tube head is so mounted as to preclude the possibility, even through negligence, of its becoming accidentally detached from the extension bracket, it may nevertheless be easily removed for inspection or service.

An Artistic Design

There is a justifiable pride with which the dentist receives his patients in the pleasant surroundings of a well appointed office, and their reaction is a psychological factor of no little importance.

More and more the public generally is becoming conscious of the presence or absence of style and taste, be it in the home, the retail store, or the professional office. The progressive manufacturer has not overlooked every opportunity to combine beauty and utility in the design of his product, as witness some of the modern gas stoves and refrigerators which grace the once humble but recreated kitchen of today.

The CDX—Model E also expresses the esthetic perceptions of its designers. Its beauty of design has been the subject of admiration no less than its features of utility and remarkable efficiency. To see it is to immediately visualize it as an impressive addition to one's own office. Here is harmony in design which blends with surroundings of perfect taste. Here is attractiveness without obtrusiveness.

Experience and Integrity of the Manufacturer

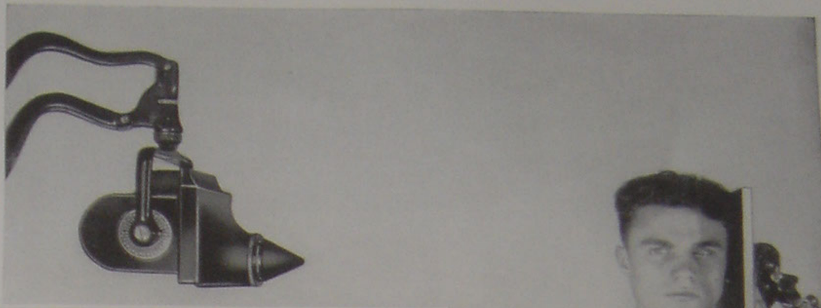
The experienced dental radiologist considers the selection of x-ray apparatus as vitally important as the selection of any other equipment for the dental office. He realizes that engineering knowledge, long experience and integrity of the manufacturer are factors which determine to a great extent the degree of satisfaction to be derived from the use of the apparatus over a period of years.

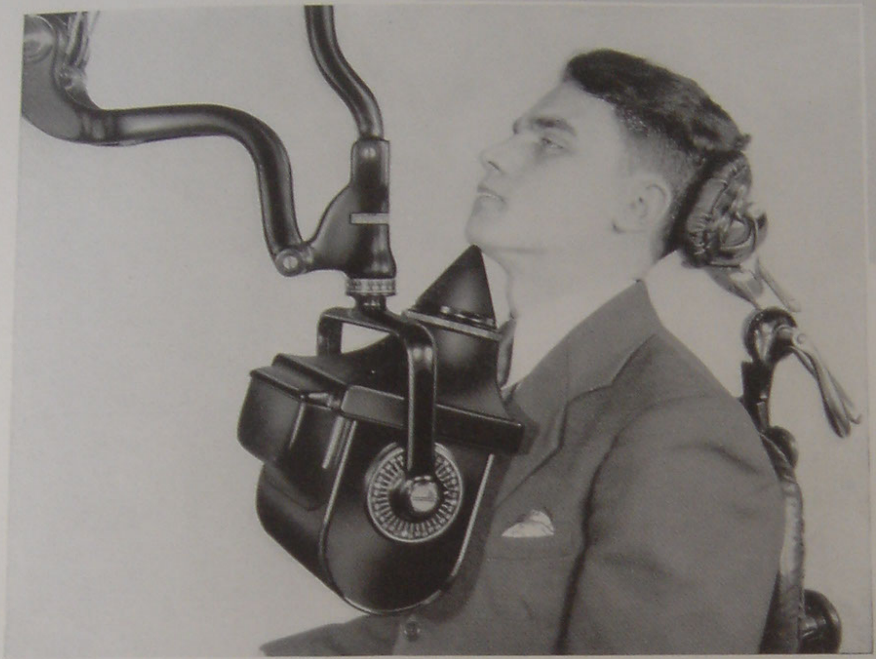
The G-E trademark on the CDX—Model E is recognized everywhere as the symbol of high quality as well as the integrity and responsibility of the manufacturer.

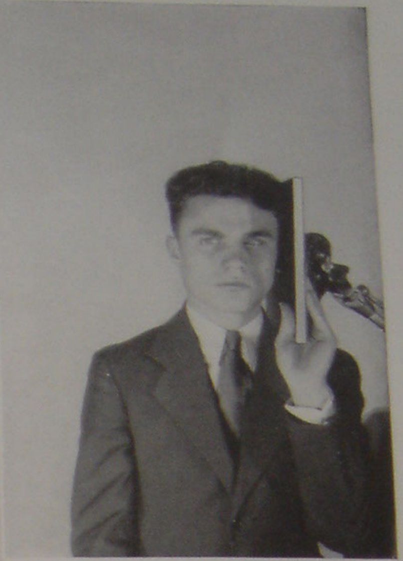
The knowledge and ability of our engineers and designers, together with many years experience in the design and production of x-ray apparatus, is at once apparent in the CDX—Model E. It is truly representative of the G-E Research Laboratory, popularly known as the *House of Magic*, where it had its inception, and reflects the engineering ability which brought it to its present degree of perfection. It is a product of the same research and engineering talent that has created many other types of x-ray apparatus, from the smallest to the largest, as used not only in dentistry, but also in every branch of medicine, likewise in industry.

Thus the CDX—Model E affords a background the significance of which a prospective purchaser will not fail to appreciate.

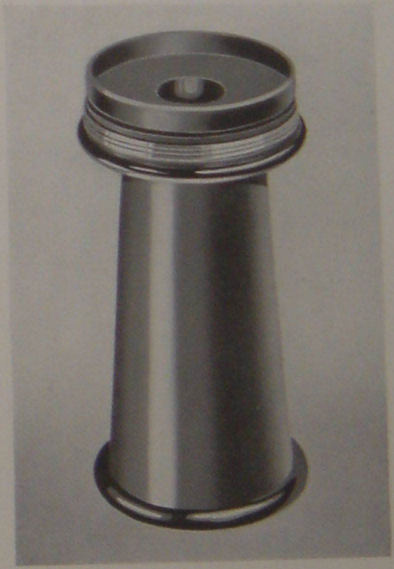
The rotating range of the tube head in both planes permits instant positioning for the most difficult regions.

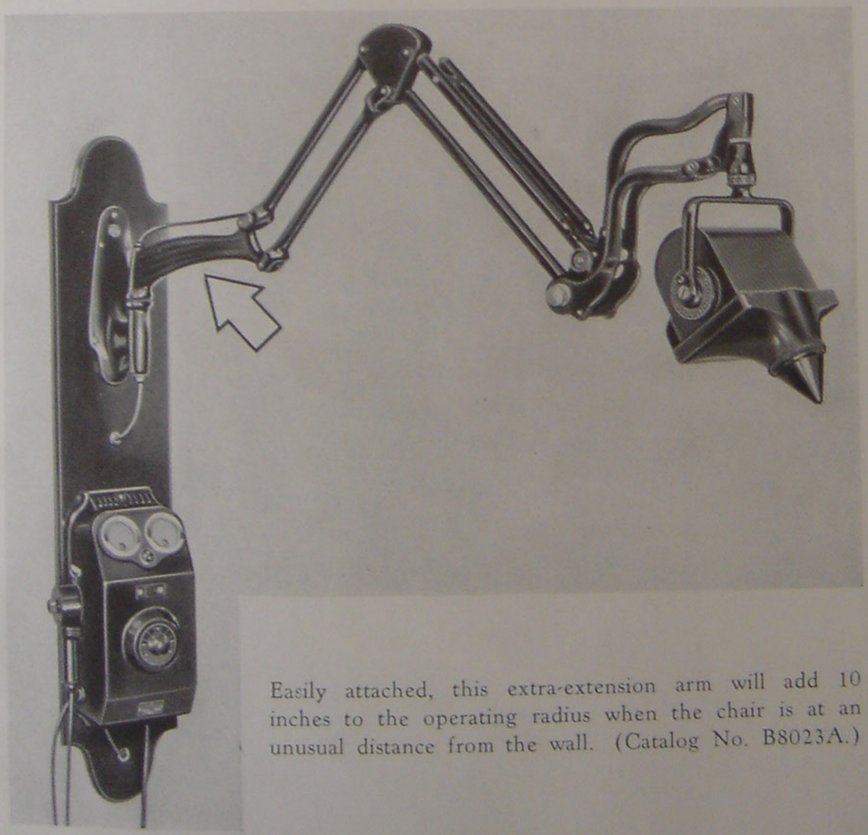






Flexibility and range of the extension bracket make long film-target distance technics as practical as close-ups with the patient in the dental chair.





Easily attached, this extra-extension arm will add 10 inches to the operating radius when the chair is at an unusual distance from the wall. (Catalog No. B8023A.)

Radiographic results, particularly of the skull, are greatly improved with this Sinus Cone. It will increase contrast and visibility of detail; reduce film-fog by decreasing the skull area exposed to x-ray. Easily attached, the cone aids in properly positioning the tube head; automatically determines the tube-film distance; and acts as an immobilizing device, because it is placed against the patient's head. (Cat. No. C3007A)

SPECIFICATIONS

	WALL TYPE	MOBILE TYPE
Finish	Mahogany, black and standard Duco colors. The time switch, spring housings and trimmings are in black and chrome. Wall panel finished in black only.	Mahogany, black and standard Duco colors. The time switch, spring housing, base and trimming finished in black and chrome.
Dimensions, Floor Space, Etc.	No floor space.	Overall, occupies floor space 17" by 25". Distance across legs of base—chair side—tip to tip, 25". Distance across legs of base—control side— tip to tip, 17". Distance across legs of base—front to back— tip to tip, 25". Height from floor—bracket folded up—85". Height from floor—bracket stop removed and bracket fully extended—73".
	Wall Type CDX Model "E" as listed below includes the oil immersed CDX Coolidge Tube, automatic hand timing switch, mounting panel, connecting cables, wall receptacle for line cable, etc. A rotary converter and starting box are included with direct current models.	Mobile type CDX Model "E" as listed below includes the oil immersed CDX Coolidge Tube, automatic hand timing switch, connecting cables, wall receptacle for line cable, etc. A rotary converter and starting box are included with direct current models.

Catalog Listings

Code	Cat. No.	Voltage	Current & Frequency	Net Wgt.	Shipping Wgt.
ABDJY	A0008A	115	40-60cy-AC	168 lbs.	266 lbs.
ABDMO	A0008B	230	40-60cy-AC	168 lbs.	266 lbs.
ABDOE	A0008C	115	DC	260 lbs.	386 lbs.
ABDSI	A0008D	230	DC	260 lbs.	386 lbs.

Code	Cat. No.	Voltage	Current & Frequency	Net Wgt.	Shipping Wgt.
ABDUK	A0008E	115	40-60cy-AC	306 lbs.	471 lbs.
ABDXA	A0008F	230	40-60cy-AC	306 lbs.	471 lbs.
ABDYB	A0008G	115	DC	398 lbs.	591 lbs.
ABEBY	A0008H	230	DC	398 lbs.	591 lbs.

Specify exact voltage and frequency and color when ordering

ACCESSORIES

	Code	Cat. No.	Net Wt.	Ship. Wt.
Sinus Cone	CANUX	C3007A	1½ lbs.	2½ lbs.
Extra-extension Arm	BALHY	B8023A	6 lbs.	7 lbs.

GUARANTEE

THE CDX MODEL "E" DENTAL X-RAY UNIT, exclusive of the tube, is guaranteed against all inherent defects in manufacture for a period of one year. The guarantee period is not, of course, indicative of the life of this apparatus. Charges and adjustments for service after the guarantee period has expired will be on the same broad and liberal plan as has been in effect on G-E products for years

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The General Electric X-Ray Corporation reserves the right to make any changes in specifications or prices without incurring any obligation to have same apply on apparatus previously sold.

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GENERAL ELECTRIC
X-RAY CORPORATION

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